

CLAIMS

1. Process for discriminating nuclear fuels from their composition, whereby two types of radiation emitted by the fuel are measured, deducing the level of burn-up (TC) of the fuel from the measured value (n) of one of the types of radiation, assuming that the fuel has a defined composition, estimating an emission value for the other type of radiation as a function of the assumed composition and the level of deduced burn-up of the fuel, comparing this estimated emission value with the measured value (γ) of the other type of radiation, and concluding that the assumed composition of the fuel is the real composition if the values composed are similar, and that, if not, the fuel has another composition.
2. Process for discriminating nuclear fuels according to claim 1, whereby one of the types of radiation is neutron radiation and the other type of radiation is gamma radiation over an emission energy range of at least one long life radioactive element
3. Device for discriminating nuclear fuels in an installation, comprising a structure subjacent to the storage cells immersed in a water filled bay, comprising a first detector, (15), of a first type of radiation, a second detector, (16), of a second type of radiation, a waterproof casing, (2), containing the detectors, whereby it contains the means of attaching the casing, (13, 14), to a boom, (3), that descends towards the fuel and the means of placing, (6, 9), the casing in a given position on at least one of the cells, (5), adjoining a cell containing the nuclear fuel, (26), that is the subject of the discrimination.

4. Device for discriminating nuclear fuels according to claim 3, whereby one of the detectors is a gamma radiation detector located behind two collimators in continuation (25, 31; 32, 34), comprising a rear collimator, located just in front of the said detector and opening up onto the whole detection area of a detection body, and a front collimator, with a slot section extended in the transversal direction of a fuel element.

5. Device for discriminating nuclear fuels according to claim 4, whereby the casing comprises a fixed part (36) bearing the means for attaching it, and a mobile part, (38), that pivots around the fixed part in such a way as to turn the slot a quarter turn or a half turn.

6. Device for discriminating nuclear fuels according to either claim 4 or claim 5, whereby the slot has a variable extension dimension and broadens out towards the fuel element.